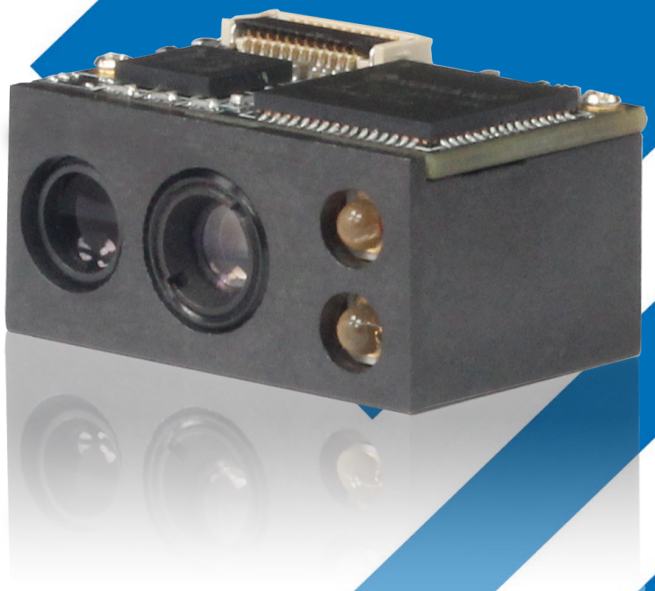
Newland

Newland Taiwan Inc.

NLS-EM3096

OEM Scan Engine

User Guide



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V1.0.1	Updates: 1. Added the **Custom Defaults** feature in Chapter 1. 2. Added the **Power-Saving Mode** feature and 8 additional USB country keyboard types in Chapter 2. **Note: You must have firmware version V1.03.076 or higher to use the new features above.**	January 13, 2015

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0006010
Enter Setup

Chapter 1 Getting Started

Introduction

The NLS-EM3096 OEM scan engines, armed with the Newland patented UIMG®, a computerized image recognition system, bring about a new era of 2D barcode scan engines.

The EM3096s' 2D barcode decoder chip ingeniously blends UIMG® technology and advanced chip design & manufacturing, which significantly simplifies application design and delivers superior performance and solid reliability with low power consumption.

The EM3096s support all mainstream 1D and standard 2D barcode symbologies (e.g., PDF417, QR Code M1/M2/Micro and Data Matrix) as well as GS1-DataBarTM(RSS) (Limited/Stacked/Expanded versions). It can read barcodes on virtually any medium - paper, plastic card, mobile phones and LCD displays.

This compact, lightweight engine fits easily into even the most space-constrained equipments such as data collectors, meter readers, ticket validators and PDAs.

About This Guide

This guide provides programming instructions for the EM3096. Users can configure the EM3096 by scanning the programming barcodes included in this manual.

The EM3096 has been properly configured for most applications and can be put into use without further configuration. Users may check the **Factory Defaults Table** in **Appendix** for reference. Throughout the manual, asterisks (**) indicate factory default values.

Connecting EVK to PC

The EVK tool is provided to assist users in application development for the EM3096. You can connect the EVK to PC via a USB connection or an RS-232 connection. In case of USB connection, a driver is required if PC wants to communicate with EM3096 and receive decoded data through virtual serial port.

0006000
*** Exit Setup**

Enter Setup

Barcode Scanning

Powered by area-imaging technology and Newland patented UIMG® technology, the EM3096 features fast scanning and accurate decoding. Barcodes rotated at any angle can still be read with ease. When scanning a barcode, simply center the aiming beam or pattern projected by the EM3096 over the barcode.

Barcode Programming

Scanning the **Enter Setup** barcode can enable the engine to enter the setup mode. Then you can scan a number of programming barcodes to configure your engine. To exit the setup mode, scan the **Exit Setup** barcode.

If the engine has exited the setup mode, only some special programming barcodes, such as the **Enter Setup** barcode and **Restore All Factory Defaults** barcode, can be read.

Enter Setup

**** Exit Setup**

Programming barcode data can be transmitted to the Host. Scan the appropriate barcode below to enable or disable the transmission of programming barcode data (i.e. the characters under programming barcode) to the Host.

Restarting the engine will automatically disable the transmisison of programming barcode data to the Host.

Transmit Programming Barcode Data

**** Do Not Transmit Programming Barcode Data**

*** Exit Setup**

Enter Setup

Factory Defaults

Scanning the following barcode can restore the engine to the factory defaults. See **Appendix 1: Factory Defaults Table** for more information.

Note: Use this feature with discretion.

Restore All Factory Defaults

Custom Defaults

Custom defaults make it possible to save the frequently-used settings on the engine.

Scanning the **Save as Custom Defaults** barcode can save the current settings as custom defaults. Once custom default settings are stored, they can be recovered at any time by scanning the **Restore All Custom Defaults** barcode.

Custom defaults are stored in the non-volatile memory. Restoring the engine to the factory defaults will not remove the custom defaults from the engine.

Save as Custom Defaults

Restore All Custom Defaults

*** Exit Setup**

0006010

Enter Setup

Chapter 2 Communication Interfaces

The EM3096 provides a TTL-232 interface and a USB interface (optional) to communicate with the host device. The host device can receive scanned data and send commands to control the engine or to access/alter the configuration information of the engine via the interface.

Power-Saving Mode

By default, the engine adopts the Power-Saving Mode to conserve power. However, if this mode is selected, you can only use TTL-232 communication. If the Normal Mode is selected, you can use either TTL-232 or USB.

0009000

Normal Mode

(TTL-232 & USB supported)

0009010

**** Power-Saving Mode**

(TTL-232 supported)

0006000

*** Exit Setup**

0006010

Enter Setup

TTL-232 Interface

Serial communication interface is usually used when connecting the engine to a host device (like PC, POS). However, to ensure smooth communication and accuracy of data, you need to set communication parameters (including baud rate, parity check, data bit and stop bit) to match the host device.

The serial communication interface provided by the engine is based on TTL-level signals. TTL-232 can be used for most application architectures. For those requiring RS-232, an external conversion circuit is needed. The conversion circuit is available only to some models.

**** Serial Communication**

Default serial communication parameters are listed below. Make sure all parameters match the host requirements.

Parameter	Factory Default
Serial Communication	Standard TTL-232
Baud Rate	9600
Parity Check	None
Data Bits	8
Stop Bits	1
Hardware Flow Control	None

Enter Setup

Baud Rate

Baud rate is the number of bits of data transmitted per second. Set the baud rate to match the Host requirements.

**** 9600**

1200

19200

2400

38400

4800

57600

14400

115200

*** Exit Setup**

0006010

Enter Setup

Parity Check

When the number of data bits is set to 7, you can only select either **Even Parity** or **Odd Parity**. The **None** option will be regarded as **Even Parity** in this case.

0101000

**** None**

0101010

Even Parity

0101020

Odd Parity

Data Bit

When the number of data bits is set to 7, you can only select either **Even Parity** or **Odd Parity**.

0103020

7 Data Bits

0103030

**** 8 Data Bits**

0006000

*** Exit Setup**

0006010

Enter Setup

Data Bit & Parity Check

7 Data Bits/Even Parity

7 Data Bits/Odd Parity

**** 8 Data Bits/ No Parity**

8 Data Bits/Even Parity

8 Data Bits/Odd Parity

Stop Bit

**** 1 Stop Bit**

2 Stop Bits

Enter Setup

USB Interface (Optional)

USB Enumeration

If the engine is connected to the Host via a USB connection, the engine will be enumerated using S/N or “00000000” after power-up. **Enumeration using S/N** enables the Host to distinguish even between engines of same model. **Enumeration using “00000000”** disables the Host from distinguishing between engines of same model.

Driver installation is required for each USB device distinguished from others by the Host in the process of enumeration.

Enumeration Using S/N

**** Enumeration Using “00000000”**

USB HID-KBW

When you connect the engine to the Host via a USB connection, you can enable the **USB HID-KBW** feature by scanning the barcode below. Then engine’s transmission will be simulated as USB keyboard input. The Host receives keystrokes on the virtual keyboard. It works on a Plug and Play basis and no driver is required.

USB HID-KBW

*** Exit Setup**

0006010

Enter Setup

USB Country Keyboard Types

Keyboard layouts vary from country to country. The default setting is U.S. keyboard.

1103001

**** U.S.**

1103002

Japan

1103003

Denmark

1103004

Finland

1103005

France

1103006

Turkey_F

1103007

Italy

1103008

Norway

0006000

*** Exit Setup**

0006010

Enter Setup

Spain

Turkey_Q

UK

Austria, Germany

Belgium

Russia

Sweden

Portugal

0006000

*** Exit Setup**

Enter Setup

Beep on Unknown Character

Due to the differences in keyboard layouts, some characters contained in barcode data may be unavailable on the selected keyboard. As a result, the engine fails to transmit the unknown characters.

Scan the appropriate barcode below to enable or disable the emission of beep when an unknown character is detected.

Beep on Unknown Character

**** Do Not Beep on Unknown Character**

Inter-Keystroke Delay

This parameter specifies the delay between emulated keystrokes.

**** No Delay**

Short Delay (20ms)

Long Delay (40ms)

*** Exit Setup**

0006010

Enter Setup

Convert Case

Scan the appropriate barcode below to convert barcode data to your desired case.

1103040

**** No Case Conversion**

1103043

Invert Upper and Lower Case Characters

1103041

Convert All to Upper Case

1103042

Convert All to Lower Case

Example: When the **Convert All to Lower Case** feature is enabled, barcode data “AbC” is transmitted as “abc”.

USB COM Port Emulation

If you connect the engine to the Host via a USB connection, the **USB COM Port Emulation** feature allows the Host to receive data in the way as a serial port does. A driver is required for this feature.

1100060

USB COM Port Emulation

0006000

*** Exit Setup**

0006010

Enter Setup

Chapter 3 Scan Mode

Batch Mode

If the Batch Mode is enabled, driving the TRIG pin on the host interface connector low activates a round of multiple decode sessions. This round of multiple scans continues until the active trigger signal is no longer present. Rereading the same barcode is not allowed if it was decoded previously in the same round. For good decode, the engine transmits decoded data via communication port. To activate another round of multiple scans, the Host needs to first negate the trigger, waits 20ms or longer and then drive the TRIG pin low.

**** Batch Mode**

0006000

*** Exit Setup**

Enter Setup

Trigger Mode

If the Trigger Mode is enabled, driving the TRIG pin on the host interface connector low activates a decode session. The session continues until the barcode is decoded or decode session timeout expires or the active trigger signal is no longer present. For good decode, the engine transmits decoded data via communication port. To activate another session, the Host needs to first negate the trigger, waits 20ms or longer and then drive the TRIG pin low.

Trigger Mode

Decode Session Timeout

This parameter sets the maximum time decode session continues during a scan attempt. It is programmable in 1ms increments from 0ms to 3,600,000ms. The default setting is 3,000ms. To learn how to program this parameter, see **Appendix 5**.

Decode Session Timeout

*** Exit Setup**

0006010

Enter Setup

Level Trigger/Pulse Trigger

Level trigger: Decode session is activated and continued by constant active trigger signal. The decode session ends once the barcode is decoded or decode session timeout expires.

Pulse trigger: Decode session is activated by electric pulse of trigger signal. The decode session continues until the barcode is decoded or decode session timeout expires.

0313090

**** Level Trigger**

0313091

Pulse Trigger

Auto Sleep

Auto Sleep allows the engine in the Trigger Mode to automatically enter the sleep or low power mode if no operation or communication is performed for a time period (user programmable). When the engine is in the sleep mode, receiving trigger signal or communication from the Host can awake the engine. The engine returns to full operation within 100ms.

0313060

**** Enable Auto Sleep**

0313070

Disable Auto Sleep

The parameter below specifies how long the engine remains idle (no operation or communication occurs) before it is put into sleep mode. It is programmable in 1ms increments from 0ms to 65,535ms. The default setting is 500ms. To learn how to program this parameter, see **Appendix 5**.

0313050

Time Period from Idle to Sleep

0006000

*** Exit Setup**

0006010

Enter Setup

Sense Mode

If the Sense Mode is enabled, the engine activates a decode session every time it detects a change in ambient illumination. The decode session continues until the barcode is decoded or the decode session timeout expires.

Driving the TRIG pin on the host interface connector low can also activate a decode session. The decode session continues until the active trigger signal is no longer present or the barcode is decoded or the decode session timeout expires. The trigger signal needs to be negated before the engine is able to monitor ambient illumination again.

0302010

Sense Mode

Decode Session Timeout

This parameter sets the maximum time decode session continues during a scan attempt. If the timeout expires or the barcode is decoded, the engine goes back to monitoring ambient illumination. It is programmable in 1ms increments from 0ms to 3,600,000ms. The default setting is 3,000ms. To learn how to program this parameter, see **Appendix 5**.

0313000

Decode Session Timeout

Image Stabilization Timeout

The image stabilization timeout is programmable in 1ms increments from 0ms to 1,600ms. The default setting is 500ms.To learn how to program this parameter, see **Appendix 5**.

0313120

Image Stabilization Timeout

0006000

*** Exit Setup**

0006010

Enter Setup

Continue after Good Decode

Continue after Good Decode: The engine starts next decode session after good decode.

Pause after Good Decode: The engine starts another round of illumination monitoring and image stabilization after good decode.

0313130

**** Pause after Good Decode**

0313131

Continue after Good Decode

Timeout between Decodes (Same Barcode)

Timeout between Decodes (Same Barcode) can avoid undesired rereading of same barcode in a given period of time.

To enable/disable the Timeout between Decodes (Same Barcode), scan the appropriate barcode below.

Enable Timeout between Decodes: Do not allow the engine to re-read same barcode before the timeout between decodes (same barcode) expires.

Disable Timeout between Decodes: Allow the engine to re-read same barcode.

0313020

**** Disable Timeout between Decodes**

0313030

Enable Timeout between Decodes

0006000

*** Exit Setup**

0006010

Enter Setup

The following parameter sets the timeout between decodes for same barcode. It is programmable in 1ms increments from 0ms to 65,535ms. The default setting is 1,500ms.

To learn how to program this parameter, see **Appendix 5**.

Timeout between Decodes (Same Barcode)

Sensitivity

Sensitivity specifies the degree of acuteness of the engine's response to changes in ambient illumination. The higher the sensitivity, the lower requirement in illumination change to trigger the engine. You can select an appropriate degree of sensitivity that fits the ambient environment.

Medium Sensitivity

Low Sensitivity

High Sensitivity

Enhanced Sensitivity

*** Exit Setup**

0006010

Enter Setup

If the above four options fail to meet your needs, you may program the threshold value of illumination change.

Illumination changes that reaches or surpasses the predefined threshold value will cause the engine to start a decode session. The lower the threshold value, the greater the sensitivity of the engine. The default threshold value is 2.

To learn how to program this parameter, see **Appendix 5**.

0312040

Threshold Value of Illumination Change (1-20)

0006000

*** Exit Setup**

0006010

Enter Setup

Continuous Mode

This mode enables the engine to scan/capture, decode and transmit over and over again.

When the engine is operating in Continuous Mode, barcode reading can be suspended/resumed through control over the trigger signal. When barcode reading is in progress, negating the trigger signal after having maintained it for 30ms or longer will suspend barcode reading; when barcode reading is suspended, performing the same control over the trigger signal will resume barcode reading.

Continuous Mode

Decode Session Timeout

This parameter sets the maximum time decode session continues during a scan attempt. It is programmable in 1ms increments from 0ms to 3,600,000ms. The default setting is 3,000ms. To learn how to program this parameter, see **Appendix 5**.

Decode Session Timeout

Timeout between Decodes

This parameter sets the timeout between decode sessions. When a decode session ends, next session will not happen until the timeout between decodes expires. It is programmable in 1ms increments from 0ms to 65,535ms. The default setting is 1,000ms. To learn how to program this parameter, see **Appendix 5**.

0006000

*** Exit Setup**

0006010

Enter Setup

Timeout between Decodes

Cellphone Read Mode

0313140

****Disable Cellphone Read Mode**

0313142

Enable Cellphone Read Mode

0006000

*** Exit Setup**

0006010

Enter Setup

Chapter 4 Scanning Preferences

Introduction

This chapter contains information as to how to adapt your engine to various applications with preference setting. For instance, to narrow the field of view of the engine to make sure it reads only those barcodes intended by the user.

Decode Area

Whole Area Decoding

When this option is enabled, the engine attempts to decode barcode(s) within its field of view, from the center to the periphery, and transmits the barcode that has been first decoded.

0322000

**** Whole Area Decoding**

Central Area Decoding

The engine attempts to decode barcode(s) within a specified central area and transmits the barcode that has been first decoded. This option allows the engine to narrow its field of view to make sure it reads only those barcodes intended by the user. For instance, if multiple barcodes are placed closely together, central area decoding in conjunction with appropriate pre-defined central area will insure that only the desired barcode is read.

0322010

Central Area Decoding

0006000

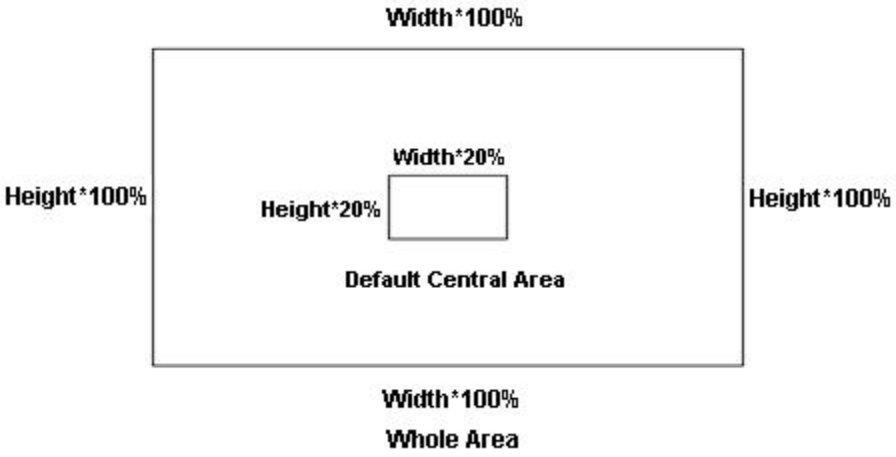
*** Exit Setup**

0006010

Enter Setup

Specify Central Area

The default central area is a (Width*20%) by (Height*20%) area in the center of the engine's field of view, as shown in the figure below. You can define the central area by scanning the **Specify Central Area** barcode and numeric barcode(s) corresponding to a desired percentage (1-100). If Central Area Decoding is enabled by scanning the **Central Area Decoding** barcode, the engine only reads barcodes that intersect the predefined central area.



To learn how to program this parameter, see the **"Appendix 5: Parameter Programming Examples".**

0322020

Specify Central Area

0006000

*** Exit Setup**

Enter Setup

Chapter 5 Illumination & Aiming

Illumination

A couple of illumination options are provided to improve the lighting conditions during every image capture:

Normal: Illumination LEDs are turned on during image capture.

Always ON: Illumination LEDs keep ON after the engine is powered on.

OFF: Illumination LEDs are OFF all the time.

**** Normal**

OFF

Always ON

*** Exit Setup**

0006010

Enter Setup

Aiming

When scanning/capturing image, the engine projects an aiming pattern which allows positioning the target barcode within its field of view and thus makes decoding easier.

Normal: The engine projects an aiming pattern only during barcode scanning/capture.

Always ON: Aiming pattern is constantly ON after the engine is powered on.

OFF: Aiming pattern is OFF all the time.

0201000

**** Normal**

0201020

OFF

0201010

Always ON

0006000

*** Exit Setup**

0006010

Enter Setup

Chapter 6 Beep & LED Indications

Startup Beep

If startup beep is enabled, the engine will beep after being turned on.

**** Enable Startup Beep**

Disable Startup Beep

0006000

***** Exit Setup**

0006010

Enter Setup

Beep after Good Decode (Non-programming Barcode)

The engine can provide a PWM output to an external driver circuit to drive a beeper after decoding a non-programming barcode. Scan the appropriate barcode below to enable or disable the emission of good decode beep. Beep type (frequency) and volume are also user programmable.

0203010

**** Beep after Good Decode,Non-programming barcode**

0203000

Do Not Beep after Good Decode,Non-programming barcode

Beep Type

0203020

Type 1

0203022

**** Type 3**

0203021

Type 2

0006000

*** Exit Setup**

0006010

Enter Setup

Beep Volume

**** Loud**

Low

Medium

Beep on Unknown Character

Due to the differences in keyboard layouts, some characters contained in barcode data may be unavailable on the selected keyboard (USB HID-KBW). As a result, the engine fails to transmit the unknown characters.

Scan the appropriate barcode below to enable or disable the emission of beep when an unknown character is detected.

Beep on Unknown Character

**** Do Not Beep on Unknown Character**

0006000

*** Exit Setup**

Enter Setup

Beep after Good Decode (Programming Barcode)

**** Beep after Good Decode, Programming Barcode**

Do Not Beep after Good Decode, Programming Barcode

LED Notification for Good Decode

**** Good Decode LED Notification ON**

Good Decode LED Notification OFF

*** Exit Setup**

Enter Setup

Transmit NGR Message

Scan a barcode below to select whether or not to transmit a user-defined NGR (Not Good Read) message when a barcode is not decoded.

Transmit NGR Message

**** Do Not Transmit NGR Message**

Edit NGR Message

To edit an NGR message, scan the **Edit NGR Message** barcode and the numeric barcodes corresponding to the ASCII values (decimal) of desired characters and then scan the **Save** barcode.

An NGR message can contain 0-7 characters (ASCII value of character: 0-255).

Edit NGR Message

*** Exit Setup**

Enter Setup

Chapter 7 Data Formatting

In many applications, barcode data needs to be edited and distinguished from one another.

Usually AIM ID and Code ID can be used as identifiers, but in some special cases customized prefix and terminating character suffix like Carriage Return or Line Feed can also be the alternatives.

Data formatting may include:

- ✧ Append AIM ID/Code ID/custom prefix before the decoded data
- ✧ Append custom suffix after the decoded data
- ✧ Append terminating character to the end of the data

The following formats can be used when editing barcode data:

- ✧ [Code ID] + [Custom Prefix] + [AIM ID] + [DATA] + [Custom Suffix] + [Terminating Character]
- ✧ [Custom Prefix] + [Code ID] + [AIM ID] + [DATA] + [Custom Suffix] + [Terminating Character]

* Exit Setup

Enter Setup

General Settings

Enable/Disable All Prefix/Suffix

Disable All Prefix/Suffix: Transmit barcode data with no prefix/suffix.

Enable All Prefix/Suffix: Allow user to append Code ID prefix, AIM ID prefix, custom prefix/suffix and terminating character to the barcode data before the transmission.

Enable All Prefix/Suffix

Disable All Prefix/Suffix

Prefix Sequences

Code ID+Custom Prefix+AIM ID

**** Custom Prefix+Code ID+AIM ID**

*** Exit Setup**

Enter Setup

Custom Prefix

Enable/Disable Custom Prefix

If custom prefix is enabled, you are allowed to append to the data a user-defined prefix that cannot exceed 10 characters.

Enable Custom Prefix

**** Disable Custom Prefix**

Set Custom Prefix

To set a custom prefix, scan the **Set Custom Prefix** barcode and the numeric barcodes representing the hexadecimal values of a desired prefix and then scan the **Save** barcode. Refer to **Appendix 4: ASCII Table** for hexadecimal values of characters.

Note: A custom prefix cannot exceed 10 characters.

Set Custom Prefix

Example: Set the custom prefix to "CODE"

1. Check the hex values of "CODE" in the ASCII Table. ("CODE": 43, 4F, 44, 45)
2. Scan the **Enter Setup** barcode.
3. Scan the **Set Custom Prefix** barcode.
4. Scan the numeric barcodes "4", "3", "4", "F", "4", "4", "4" and "5".
5. Scan the **Save** barcode.
6. Scan the **Exit Setup** barcode.

*** Exit Setup**

0006010

Enter Setup

AIM ID Prefix

AIM (Automatic Identification Manufacturers) IDs and ISO/IEC 15424 standards define symbology identifiers and data carrier identifiers. (For the details, see the **"Appendix 2: AIM ID Table"** section). If AIM ID prefix is enabled, the engine will add the symbology identifier before the scanned data after decoding.

0308030

Enable AIM ID Prefix

0308000

**** Disable AIM ID Prefix**

Code ID Prefix

Code ID can also be used to identify barcode type. Unlike AIM ID, Code ID is user programmable. Code ID can only consist of one or two English letters.

0307010

Enable Code ID Prefix

0307000

**** Disable Code ID Prefix**

Restore All Default Code IDs

For the information of default Code IDs, see the **"Appendix 3: Code ID Table"** section.

0307020

Restore All Default Code IDs

0006000

*** Exit Setup**

0006010

Enter Setup

Modify Code ID

Code ID of each symbology can be programmed separately. See the following example to learn how to program a Code ID.

Example: Set the Code ID of PDF417 to "p"

1. Check the hex value of "p" in the ASCII Table. ("p": 70)
2. Scan the **Enter Setup** barcode.
3. Scan the **Modify PDF417 Code ID** barcode.
4. Scan the numeric barcodes "7" and "0".
5. Scan the **Save** barcode.
6. Scan the **Exit Setup** barcode.

0005000

Modify PDF417 Code ID

0005030

Modify Data Matrix Code ID

0005010

Modify QR Code Code ID

0004020

Modify Code 128 Code ID

0004030

Modify GS1-128 Code ID

0004210

Modify AIM-128 Code ID

0006000

*** Exit Setup**

0006010

Enter Setup

Modify EAN-8 Code ID

Modify EAN-13 Code ID

Modify UPC-E Code ID

Modify UPC-A Code ID

Modify ISBN Code ID

Modify ISSN Code ID

Modify Code 39 Code ID

Modify Code 93 Code ID

Modify Interleaved 2 of 5 Code ID

Modify ITF-14 Code ID

*** Exit Setup**

0006010

Enter Setup

Modify ITF-6 Code ID

Modify Codabar Code ID

Modify Industrial 25 Code ID

Modify Standard 25 Code ID

Modify Matrix 25 Code ID

Modify COOP 25 Code ID

Modify Code 11 Code ID

Modify Plessey Code ID

Modify MSI/Plessey Code ID

Modify GS1 Databar Code ID

0006000

*** Exit Setup**

0006010

Enter Setup

Custom Suffix

Enable/Disable Custom Suffix

If custom suffix is enabled, you are allowed to append to the data a user-defined suffix that cannot exceed 10 characters.

0306010

Enable Custom Suffix

0306000

** **Disable Custom Suffix**

Set Custom Suffix

To set a custom suffix, scan the **Set Custom Suffix** barcode and the numeric barcodes representing the hexadecimal values of a desired suffix and then scan the **Save** barcode. Refer to **Appendix 4: ASCII Table** for hexadecimal values of characters.

Note: A custom suffix cannot exceed 10 characters.

0301000

Set Custom Suffix

Example: Set the custom suffix to "CODE"

1. Check the hex values of "CODE" in the ASCII Table. ("CODE": 43, 4F, 44, 45)
2. Scan the **Enter Setup** barcode.
3. Scan the **Set Custom Suffix** barcode.
4. Scan the numeric barcodes "4", "3", "4", "F", "4", "4", "4" and "5".
5. Scan the **Save** barcode.
6. Scan the **Exit Setup** barcode.

0006000

*** Exit Setup**

Enter Setup

Terminating Character Suffix

A terminating character can be used to mark the end of data, which means nothing can be added after it.

A terminating character suffix can contain one or two characters.

Enable/Disable Terminating Character Suffix

To enable/disable terminating character suffix, scan the appropriate barcode below.

** **Enable Terminating Character Suffix**

Disable Terminating Character Suffix

* **Exit Setup**

0006010

Enter Setup

Set Terminating Character Suffix

The engine provides a shortcut for setting the terminating character suffix to 0x0D or 0x0D,0x0A by scanning the following barcode.

0310010

Terminating Character 0x0D

0310020

**** Terminating Character 0x0D,0x0A**

To set a terminating character suffix, scan the **Set Terminating Character Suffix** barcode and the numeric barcodes representing the hexadecimal value of a desired terminating character and then scan the **Save** barcode. Refer to **Appendix 4: ASCII Table** for hexadecimal values of terminating characters.

Note: A terminating character suffix cannot exceed 2 characters.

0310000

Set Terminating Character Suffix

Example: Set the terminating character suffix to 0x0D

1. Scan the **Enter Setup** barcode.
2. Scan the **Set Terminating Character Suffix** barcode.
3. Scan the numeric barcodes “0” and “D”.
4. Scan the **Save** barcode.
5. Scan the **Exit Setup** barcode.

0006000

*** Exit Setup**

0006010

Enter Setup

Chapter 8 Symbologies

General Settings

Enable/Disable All Symbologies

If the **Disable All Symbologies** feature is enabled, the engine will not be able to read any non-programming barcodes except the programming barcodes.

0001020

Enable All Symbologies

0001010

Disable All Symbologies

Enable/Disable 1D Symbologies

If the **Disable 1D Symbologies** feature is enabled, the engine will not be able to read any 1D barcodes.

0001040

Enable 1D Symbologies

0001030

Disable 1D Symbologies

Enable/Disable 2D Symbologies

If the **Disable 2D Symbologies** feature is enabled, the engine will not be able to read any 2D barcodes.

0001060

Enable 2D Symbologies

0001050

Disable 2D Symbologies

0006000

*** Exit Setup**

0006010
Enter Setup

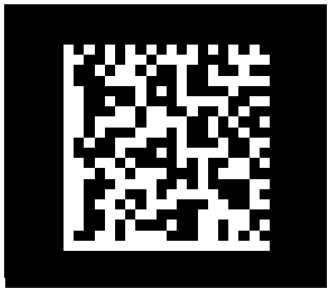
Video Reverse

Regular barcode: Dark image on a bright background.

Inverse barcode: Bright image on a dark background.

The examples of regular barcode and inverse barcode are shown below.

Regular Barcode



Inverse Barcode

Video Reverse is used to allow the engine to read barcodes that are inverted.

Video Reverse ON: Read both regular barcodes and inverse barcodes.

Video Reverse OFF: Read regular barcodes only.

The engine shows a slight decrease in scanning speed when Video Reverse is ON.

0001021

Video Reverse ON

0001011

**** Video Reverse OFF**

0006000

*** Exit Setup**

Enter Setup

1D Symbologies

Code 128

Restore Factory Defaults

Restore the Factory Defaults of Code 128

Enable/Disable Code 128

** **Enable Code 128**

Disable Code 128

Set Length Range for Code 128

Set the Minimum Length

Set the Maximum Length

* **Exit Setup**

0006010

Enter Setup

GS1-128 (UCC/EAN-128)

Restore Factory Defaults

Restore the Factory Defaults of GS1-128

Enable/Disable GS1-128

** **Enable GS1-128**

Disable GS1-128

Set Length Range for GS1-128

Set the Minimum Length

Set the Maximum Length

0006000

*** Exit Setup**

Enter Setup

AIM-128

Restore Factory Defaults

Restore the Factory Defaults of AIM-128

Enable/Disable AIM-128

**** Enable AIM-128**

Disable AIM-128

Set Length Range for AIM-128

Set the Minimum Length

Set the Maximum Length

*** Exit Setup**

0006010

Enter Setup

EAN-8

Restore Factory Defaults

Restore the Factory Defaults of EAN-8

Enable/Disable EAN-8

**** Enable EAN-8**

Disable EAN-8

*** Exit Setup**

0006010

Enter Setup

Transmit Check Digit

EAN-8 is 8 digits in length with the last one as its check digit used to verify the integrity of the data.

0401040

**** Transmit EAN-8 Check Digit**

0401030

Do Not Transmit EAN-8 Check Digit

Add-On Code

An EAN-8 barcode can be augmented with a two-digit or five-digit add-on code to form a new one. In the examples below, the part surrounded by blue dotted line is an EAN-8 barcode while the part circled by red dotted line is add-on code.

0401060

Enable 2-Digit Add-On Code

0401050

**** Disable 2-Digit Add-On Code**

0401080

Enable 5-Digit Add-On Code

0401070

**** Disable 5-Digit Add-On Code**

Enable 2-Digit Add-On Code/ Enable 5-Digit Add-On Code: The engine decodes a mix of EAN-8 barcodes with and without 2-digit/5-digit add-on codes.

Disable 2-Digit Add-On Code/ Disable 5-Digit Add-On Code: The engine decodes EAN-8 and ignores the add-on code when presented with an EAN-8 plus add-on barcode. It can also decode EAN-8 barcodes without add-on codes.

0006010

Enter Setup

Add-On Code Required

When **EAN-8 Add-On Code Required** is selected, the engine will only read EAN-8 barcodes that contain add-on codes.

EAN-8 Add-On Code Required

**** EAN-8 Add-On Code Not Required**

EAN-8 Extension

Disable EAN-8 Zero Extend: Transmit EAN-8 barcodes as is.

Enable EAN-8 Zero Extend: Add five leading zeros to decoded EAN-8 barcodes to extend to13 digits.

Enable EAN-8 Zero Extend

**** Disable EAN-8 Zero Extend**

0006010

Enter Setup

EAN-13

Restore Factory Defaults

Restore the Factory Defaults of EAN-13

Enable/Disable EAN-13

**** Enable EAN-13**

Disable EAN-13

Transmit Check Digit

**** Transmit EAN-13 Check Digit**

Do Not Transmit EAN-13 Check Digit

0006010

Enter Setup

Add-On Code

An EAN-13 barcode can be augmented with a two-digit or five-digit add-on code to form a new one.

0402060

Enable 2-Digit Add-On Code

0402050

**** Disable 2-Digit Add-On Code**

0402080

Enable 5-Digit Add-On Code

0402070

**** Disable 5-Digit Add-On Code**

Enable 2-Digit Add-On Code/ Enable 5-Digit Add-On Code: The engine decodes a mix of EAN-13 barcodes with and without 2-digit/5-digit add-on codes.

Disable 2-Digit Add-On Code/ Disable 5-Digit Add-On Code: The engine decodes EAN-13 and ignores the add-on code when presented with an EAN-13 plus add-on barcode. It can also decode EAN-13 barcodes without add-on codes.

Add-On Code Required

When **EAN-13 Add-On Code Required** is selected, the engine will only read EAN-13 barcodes that contain add-on codes.

0402090

EAN-13 Add-On Code Required

0402100

**** EAN-13 Add-On Code Not Required**

0006000

*** Exit Setup**

0006010

Enter Setup

ISSN

Restore Factory Defaults

Restore the Factory Defaults of ISSN

Enable/Disable ISSN

Enable ISSN

**** Disable ISSN**

0006000

*** Exit Setup**

0006010

Enter Setup

Add-On Code

An ISSN barcode can be augmented with a two-digit or five-digit add-on code to form a new one.

0421030

Enable 2-Digit Add-On Code

0421040

**** Disable 2-Digit Add-On Code**

0421050

Enable 5-Digit Add-On Code

0421060

**** Disable 5-Digit Add-On Code**

Enable 2-Digit Add-On Code/ Enable 5-Digit Add-On Code: The engine decodes a mix of ISSN barcodes with and without 2-digit/5-digit add-on codes.

Disable 2-Digit Add-On Code/ Disable 5-Digit Add-On Code: The engine decodes ISSN and ignores the add-on code when presented with an ISSN plus add-on barcode. It can also decode ISSN barcodes without add-on codes.

Add-On Code Required

When **ISSN Add-On Code Required** is selected, the engine will only read ISSN barcodes that contain add-on codes.

0421070

ISSN Add-On Code Required

0421080

**** ISSN Add-On Code Not Required**

0006000

*** Exit Setup**

0006010

Enter Setup

ISBN

Restore Factory Default

Restore the Factory Defaults of ISBN

Enable/Disable ISBN

**** Enable ISBN**

Disable ISBN

Set ISBN Format

****ISBN-13**

ISBN-10

0006000

*** Exit Setup**

0006010

Enter Setup

Add-On Code

An ISBN barcode can be augmented with a two-digit or five-digit add-on code to form a new one.

Enable 2-Digit Add-On Code

**** Disable 2-Digit Add-On Code**

Enable 5-Digit Add-On Code

**** Disable 5-Digit Add-On Code**

Enable 2-Digit Add-On Code/ Enable 5-Digit Add-On Code: The engine decodes a mix of ISBN barcodes with and without 2-digit/5-digit add-on codes.

Disable 2-Digit Add-On Code/ Disable 5-Digit Add-On Code: The engine decodes ISBN and ignores the add-on code when presented with an ISBN plus add-on barcode. It can also decode ISBN barcodes without add-on codes.

Add-On Code Required

When **ISBN Add-On Code Required** is selected, the engine will only read ISBN barcodes that contain add-on codes.

ISBN Add-On Code Required

**** ISBN Add-On Code Not Required**

*** Exit Setup**

0006010

Enter Setup

UPC-E

Restore Factory Defaults

Restore the Factory Defaults of UPC-E

Enable/Disable UPC-E

**** Enable UPC-E**

Disable UPC-E

Transmit Check Digit

**** Transmit UPC-E Check Digit**

Do Not Transmit UPC-E Check Digit

*** Exit Setup**

0006010

Enter Setup

Add-On Code

A UPC-E barcode can be augmented with a two-digit or five-digit add-on code to form a new one.

0403060

Enable 2-Digit Add-On Code

0403050

Enable 2-Digit Add-On Code

0403080

Enable 5-Digit Add-On Code

0403070

**** Disable 5-Digit Add-On Code**

Enable 2-Digit Add-On Code/ Enable 5-Digit Add-On Code: The engine decodes a mix of UPC-E barcodes with and without 2-digit/5-digit add-on codes.

Disable 2-Digit Add-On Code/ Disable 5-Digit Add-On Code: The engine decodes UPC-E and ignores the add-on code when presented with a UPC-E plus add-on barcode. It can also decode UPC-E barcodes without add-on codes.

Add-On Code Required

When **UPC-E Add-On Code Required** is selected, the engine will only read UPC-E barcodes that contain add-on codes.

0403130

UPC-E Add-On Code Required

0403140

**** UPC-E Add-On Code Not Required**

0006000

*** Exit Setup**

0006010

Enter Setup

Transmit System Character “0”

The first character of UPC-E barcode is the system character “0”.

0403100

Transmit System Character “0”

0403090

**** Do Not Transmit System Character “0”**

UPC-E Extension

Disable UPC-E Extend: Transmit UPC-E barcodes as is.

Enable UPC-E Extend”: Extend UPC-E barcodes to make them compatible in length to UPC-A.

0403120

Enable UPC-E Extend

0403110

**** Disable UPC-E Extend**

0006000

*** Exit Setup**

0006010
Enter Setup

UPC-A

Restore Factory Defaults

Restore the Factory Defaults of UPC-A

Enable/Disable UPC-A

**** Enable UPC-A**

Disable UPC-A

Transmit Check Digit

**** Transmit UPC-A Check Digit**

Do Not Transmit UPC-A Check Digit

*** Exit Setup**

0006010

Enter Setup

Add-On Code

A UPC-A barcode can be augmented with a two-digit or five-digit add-on code to form a new one.

0404060

Enable 2-Digit Add-On Code

0404050

**** Disable 2-Digit Add-On Code**

0404080

Enable 5-Digit Add-On Code

0404070

**** Disable 5-Digit Add-On Code**

Enable 2-Digit Add-On Code/ Enable 5-Digit Add-On Code: The engine decodes a mix of UPC-A barcodes with and without 2-digit/5-digit add-on codes.

Disable 2-Digit Add-On Code/ Disable 5-Digit Add-On Code: The engine decodes UPC-A and ignores the add-on code when presented with a UPC-A plus add-on barcode. It can also decode UPC-A barcodes without add-on codes.

Add-On Code Required

When **UPC-A Add-On Code Required** is selected, the engine will only read UPC-A barcodes that contain add-on codes.

0404110

UPC-A Add-On Code Required

0404120

**** UPC-A Add-On Code Not Required**

0006010
Enter Setup

Transmit Preamble Character “0”

0404100

Transmit Preamble Character “0”

0404090

**** Do not Transmit Preamble Character “0”**

Note: The preamble character “0” usually does not appear in printed UPC-A barcodes.

0006000
*** Exit Setup**

Enter Setup

Interleaved 2 of 5

Restore Factory Defaults

Restore the Factory Defaults of Interleaved 2 of 5

Enable/Disable Interleaved 2 of 5

**** Enable Interleaved 2 of 5**

Disable Interleaved 2 of 5

Set Length Range for Interleaved 2 of 5

Set the Minimum Length

Set the Maximum Length

*** Exit Setup**

0006010

Enter Setup

Check Digit Verification

A check digit is optional for Interleaved 2 o 5 and can be added as the last digit. It is a calculated value used to verify the integrity of the data.

Disable: The engine transmits Interleaved 2 of 5 barcodes as is.

Do Not Transmit Check Digit After Verification: The engine checks the integrity of all Interleaved 2 of 5 barcodes to verify that the data complies with the check digit algorithm. Barcodes passing the check will be transmitted except the last digit, whereas those failing it will not be transmitted.

Transmit Check Digit After Verification: The engine checks the integrity of all Interleaved 2 of 5 barcodes to verify that the data complies with the check digit algorithm. Barcodes passing the check will be transmitted, whereas those failing it will not be transmitted.

0405050

**** Disable**

0405060

Do Not Transmit Check Digit After Verification

0405070

Transmit Check Digit After Verification

Note: If the **Do Not Transmit Check Digit After Verification** option is enabled, Interleaved 2 of 5 barcodes with a length that is less than the configured minimum length after having the check digit excluded will not be decoded. (For example, when the **Do Not Transmit Check Digit After Verification** option is enabled and the minimum length is set to 4, Interleaved 2 of 5 barcodes with a total length of 4 characters including the check digit cannot be read.)

0006000

*** Exit Setup**

0006010

Enter Setup

ITF-14

ITF-14 is a special kind of Interleaved 2 of 5 with a length of 14 characters and the last character as the check character.

0405260

Restore the Factory Defaults of ITF-14

0405080

Disable ITF-14

0405090

** **Enable ITF-14 But Do Not Transmit Check Digit**

0405100

Enable ITF-14 and Transmit Check Digit

Note: It is advisable not to enable ITF-14 and Interleaved 2 of 5 at the same time.

0006000

*** Exit Setup**

0006010

Enter Setup

ITF-6

ITF-6 is a special kind of Interleaved 2 of 5 with a length of 6 characters and the last character as the check character.

Restore the Factory Defaults of ITF-6

**** Disable ITF-6**

Enable ITF-6 But Do Not Transmit Check Digit

Enable ITF-6 and Transmit Check Digit

Note: It is advisable not to enable ITF-6 and Interleaved 2 of 5 at the same time.

0006000

*** Exit Setup**

0006010

Enter Setup

Matrix 2 of 5

Restore Factory Defaults

Restore the Factory Defaults of Matrix 2 of 5

Enable/Disable Matrix 2 of 5

Enable Matrix 2 of 5

**** Disable Matrix 2 of 5**

Set Length Range for Matrix 2 of 5

Set the Minimum Length

Set the Maximum Length

0006000

*** Exit Setup**

0006010

Enter Setup

Check Digit Verification

Disable

**** Do Not Transmit Check Digit After Verification**

Transmit Check Digit After Verification

0006000

*** Exit Setup**

Enter Setup

Industrial 2 of 5

Restore Factory Defaults

Restore the Factory Defaults of Industrial 2 of 5

Enable/Disable Industrial 2 of 5

**** Enable Industrial 2 of 5**

Disable Industrial 2 of 5

Set Length Range for Industrial 2 of 5

Set the Minimum Length

Set the Maximum Length

*** Exit Setup**

0006010

Enter Setup

Check Digit Verification

**** Disable**

Transmit Check Digit After Verification

Do Not Transmit Check Digit After Verification

0006000

*** Exit Setup**

0006010

Enter Setup

Standard 2 of 5 (IATA 2 of 5)

Restore Factory Defaults

0418000

Restore the Factory Defaults of Standard 25

Enable/Disable Standard 25

0418020

**** Enable Standard 25**

0418010

Disable Standard 25

Set Length Range for Standard 25

0418030

Set the Minimum Length

0418040

Set the Maximum Length

0006000

*** Exit Setup**

0006010

Enter Setup

Check Digit Verification

**** Disable**

Transmit Check Digit After Verification

Do Not Transmit Check Digit After Verification

0006010

Enter Setup

Code 39

Restore Factory Defaults

Restore the Factory Defaults of Code 39

Enable/Disable Code 39

**** Enable Code 39**

Disable Code 39

Transmit Start/Stop Character

**** Transmit Start/Stop Character**

Do not Transmit Start/Stop Character

0006000

*** Exit Setup**

0006010

Enter Setup

Set Length Range for Code 39

Set the Minimum Length

Set the Maximum Length

Check Digit Verification

**** Disable**

Transmit Check Digit After Verification

Do Not Transmit Check Digit After Verification

Enable/Disable Code 39 Full ASCII

The engine can be configured to identify all ASCII characters by scanning the appropriate barcode below.

**** Enable Code 39 Full ASCII**

Disable Code 39 Full ASCII

0006010

Enter Setup

Codabar

Restore Factory Defaults

Restore the Factory Defaults of Codabar

Enable/Disable Codabar

**** Enable Codabar**

Disable Codabar

Set Length Range for Codabar

Set the Minimum Length

Set the Maximum Length

0006010

Enter Setup

Check Digit Verification

**** Disable**

Transmit Check Digit After Verification

Do Not Transmit Check Digit After Verification

Transmit Start/Stop Character

**** Transmit Start/Stop Character**

Do not Transmit Start/Stop Character

0006000

*** Exit Setup**

0006010

Enter Setup

Start/Stop Character Format

You can choose your desired start/stop character format by scanning the appropriate barcode below.

0409100

**** ABCD/ABCD as the Start/Stop Character**

0409110

ABCD/TN*E as the Start/Stop Character

0409120

Start/Stop Character in Uppercase

0409130

Start/Stop Character in Lowercase

0006010

Enter Setup

Code 93

Restore Factory Defaults

Restore the Factory Defaults of Code 93

Enable/Disable Code 93

**** Enable Code 93**

Disable Code 93

Set Length Range for Code 93

Set the Minimum Length

Set the Maximum Length

0006000

*** Exit Setup**

0006010

Enter Setup

Check Digit Verification

Disable

**** Do Not Transmit Check Digit After Verification**

Transmit Check Digit After Verification

0006010
Enter Setup

GS1-Databar (RSS)

Restore Factory Defaults

Restore the Factory Defaults of GS1-Databar

Enable/Disable GS1 Databar

**** Enable GS1-DataBar**

Disable GS1-DataBar

Transmit Application Identifier “01”

**** Transmit Application Identifier “01”**

Do Not Transmit Application Identifier “01”

*** Exit Setup**

Enter Setup

Code 11

Restore Factory Defaults

Restore the Factory Defaults of Code 11

Enable/Disable Code 11

**** Enable Code 11**

Disable Code 11

Set Length Range for Code 11

Set the Minimum Length

Set the Maximum Length

*** Exit Setup**

0006010

Enter Setup

Transmit Check Digit

0415120

Transmit Check Digit

0415110

**** Do Not Transmit Check Digit**

Check Digit Verification

0415050

Disable

0415060

**** One Check Digit, MOD11**

0415070

Two Check Digits, MOD11/MOD11

0415080

Two Check Digits, MOD11/MOD9

0415090

One Check Digit, MOD11 (Len<=10)

Two Check Digits, MOD11/MOD11 (Len>10)

0415100

One Check Digit, MOD11 (Len<=10)

Two Check Digits, MOD11/MOD9 (Len>10)

0006000

*** Exit Setup**

Enter Setup

Plessey

Restore Factory Defaults

Restore the Factory Defaults of Plessey

Enable/Disable Plessey

**** Enable Plessey**

Disable Plessey

Set Length Range for Plessey

Set the Minimum Length

Set the Maximum Length

*** Exit Setup**

0006010

Enter Setup

Check Digit Verification

Disable

**** Do Not Transmit Check Digit After Verification**

Transmit Check Digit After Verification

0006000

*** Exit Setup**

Enter Setup

MSI-Plessey

Restore Factory Defaults

Restore the Factory Defaults of MSI-Plessey

Enable/Disable MSI-Plessey

**** Enable MSI-Plessey**

Disable MSI-Plessey

Set Length Range for MSI-Plessey

Set the Minimum Length

Set the Maximum Length

*** Exit Setup**

0006010

Enter Setup

Transmit Check Digit

0420100

Transmit Check Digit

0420090

**** Do Not Transmit Check Digit**

Check Digit Verification

0420050

Disable

0420060

**** One Check Digit, MOD10**

0420070

Two Check Digits, MOD10/MOD10

0420080

Two Check Digits, MOD10/MOD11

0006000

***** Exit Setup**

0006010

Enter Setup

2D Symbologies

PDF 417

Restore Factory Defaults

0501000

Restore the Factory Defaults of PDF 417

Enable/Disable PDF 417

0501020

**** Enable PDF 417**

0501010

Disable PDF 417

Set Length Range for PDF 417

0501030

Set the Minimum Length

0501040

Set the Maximum Length

0006010

Enter Setup

PDF 417 Twin Code

PDF417 twin code is 2 PDF417 barcodes paralleled vertically or horizontally. Two of them must have the same direction and similar specifications and be placed closely together.

There are 3 options for reading PDF417 twin codes:

Single PDF417 Only: Read either PDF417 code.

Twin PDF417 Only: Read both PDF417 codes.

Both Single & Twin: Read both PDF417 codes. If successful, transmit as twin PDF417 only. Otherwise, try single PDF417 only.

0501070

**** Single PDF417 Only**

0501080

Twin PDF417 Only

0501090

Both Single & Twin

Transmission order of twin code

Order 1: Transmit the one containing more information first.

Order 2: Transmit the one containing less information first.

0501110

**** Order 1**

0501100

Order 2

0006000

*** Exit Setup**

0006010

Enter Setup

QR Code

Restore Factory Defaults

0502000

Restore the Factory Defaults of QR Code

Enable/Disable QR Code

0502020

**** Enable QR Code**

0502010

Disable QR Code

Set Length Range for QR Code

0502030

Set the Minimum Length

0502040

Set the Maximum Length

Micro QR

0502110

**** Enable Micro QR**

0502100

Disable Micro QR

0006000

*** Exit Setup**

0006010

Enter Setup

QR Twin Code

QR twin code is 2 QR barcodes paralleled vertically or horizontally. Two of them must have the same direction and similar specifications and be placed closely together.

There are 3 options for reading QR twin codes:

Single QR Only: Read either QR code.

Twin QR Only: Read both QR codes.

Both Single & Twin: Read both QR codes. If successful, transmit as twin QR only. Otherwise, try single QR only.

0502070

**** Single QR Only**

0502080

Twin QR Only

0502090

Both Single & Twin

0006000

*** Exit Setup**

0006010

Enter Setup

Transmission order of twin code

Order 1: Transmit the one containing more information first.

Order 2: Transmit the one containing less information first.

Order 3: If the twin code is paralleled horizontally, transmite the one on the left first; if it is paralleled vertically, transmit the one in the upper position first.

0502140

Order 1

0502130

Order 2

0502120

**** Order 3**

0006000

*** Exit Setup**

0006010
Enter Setup

Data Matrix

Restore Factory Defaults

Restore the Factory Defaults of Data Matrix

Enable/Disable Data Matrix

**** Enable Data Matrix**

Disable Data Matrix

Set Length Range for Data Matrix

Set the Minimum Length

Set the Maximum Length

0006000
*** Exit Setup**

Enter Setup

Rectangular Barcode

**** Enable Rectangular Barcode**

Disable Rectangular Barcode

Mirror Image

**** Decode Mirror Images**

Do Not Decode Mirror Images

*** Exit Setup**

0006010

Enter Setup

Data Matrix Twin Code

Data Matrix twin code is 2 Data Matrix barcodes paralleled vertically or horizontally. Two of them must have the same direction and similar specifications and be placed closely together.

There are 3 options for reading Data Matrix twin codes:

Single Data Matrix Only: Read either Data Matrix code.

Twin Data Matrix Only: Read both Data Matrix codes. Transmission order: Data Matrix code on the left (in the upper position) followed by the one on the right (in the lower position).

Both Single & Twin: Read both Data Matrix codes. If successful, transmit as twin Data Matrix only. Otherwise, try single Data Matrix only.

**** Single Data Matrix Only**

Twin Data Matrix Only

Both Single & Twin

0006000

*** Exit Setup**

0006010

Enter Setup

Chapter 9 Image Control

Ambient Illumination

Ambient lighting conditions may vary from one operating environment to another, such as fluorescent lit warehouses or sunlit open spaces. Fluorescent lights may flicker when using AC power source in 50-60Hz. Usually indoor illuminance is around 1,000 lux while outdoor illuminance may reach 60,000 lux or even over 100,000 lux.

Two options are provided for ambient illumination settings:

Normal Illuminance: applicable to most indoor/outdoor environments.

High Illuminance: applicable to special enviroments with super-intense light source.

Change to this settings will not take effect until the engine reboots or wakes up from sleep.

0313150

**** Normal Illuminance (0~60000lux)**

0313151

High Illuminance (60000~120000lux)

0006000

*** Exit Setup**

0006010
Enter Setup

Image Flipping

The user may get reversed images when the engine is installed in non-standard ways. When it happens, image flipping can be used to right the “wrong”.

The following figures illustrate standard image and three flipped images.

- ✧ Fig.8-1 Standard Image: Image the engine should get when it is installed properly and no reflector is used in its optical imaging system.
- ✧ Fig.8-2 Horizontal Flipped Image: It happens when horizontal reflection occurs along the optical path. To get standard images, enable the **Flip Horizontally** option.
- ✧ Fig.8-3 Vertical Flipped Image: It happens when vertical reflection occurs along the optical path. To get standard images, enable the **Flip Vertically** option.
- ✧ Fig.8-4 Horizontal and Vertical Flipped Image: It happens when the engine is installed upside down. To get standard images, enable the **Flip Horizontally and Vertically** option.

Fig.8-1 Standard Image

Fig.8-2 Horizontal Flipped Image

Fig.8-3 Vertical Flipped Image

Fig.8-4 Horizontal and Vertical Flipped Image

0006000
*** Exit Setup**

0006010

Enter Setup

Flip

0202000

**** Do Not Flip**

0202030

Flip Vertically

0202031

Flip Horizontally

0202032

Flip Horizontally and Vertically

Flip Vertically

0202033

Flip Vertically

0202034

Do Not Flip Vertically

Flip Horizontally

0202035

Flip Horizontally

0202036

Do Not Flip Horizontally

0006000

*** Exit Setup**

Chapter 10 Troubleshooting

FAQ

Problem: Barcodes cannot be read.

Solution:

1. Find out the barcode type and verify that the barcode type is enabled. If the barcode parameters include check digit verification, select the Disable option.
2. If you do not know the barcode type, enable all symbologies.
3. If they are inverse barcodes (bright images on a dark background), enable the Video Reverse feature.

Problem: Incorrect output.

Solution:

1. If this problem happens to all barcodes and additional characters appear before/after barcode data, disable all prefix/suffix.
2. If this problem only happens to some barcodes and matches one of the following situations:

a) incomplete barcode data: Enable the check digit verification.

b) both the first and last characters are asterisks (*): Disable the transmission of start/stop characters of Code 39.

c) “a” transmitted as “+A”: Enable Code 39 Full ASCII.

Problem: Barcodes can be read, but cannot be displayed.

Solution: Verify that the serial port parameter (such as baud rate, data bit and stop bit) settings match the host requirements.

Problem: Illumination and aiming beams are OFF.

Solution:

1. Verify that the engine is properly powered up.
2. Send “?” to the engine. If the engine returns a reply of “!”, then send programming commands to turn on illumination and aimer.

Problem: Carriage Return/Line Feed settings.

Solution: See the **“Terminating Character Suffix”** section in Chapter 7.

Appendix

Appendix 1: Factory Defaults Table

Parameter		Factory Default	Remark
Programming Barcode			
Barcode Programming		Disabled	
Programming Barcode Data		Do not send	
Communication Settings			
Power-Saving Mode (Only TTL-232 supported)		Enabled	Normal Mode: TTL-232 & USB supported
TTL-232	Baud Rate	9600	
	Parity Check	None	
	Data Bit	8	
	Stop Bit	1	
	Hardware Flow Control	No flow control	
HID-KBW (optional)	USB Country Keyboard Type	U.S.	
	Convert Case	No conversion	
	Inter-Keystroke Delay	No delay	
	Beep on Unknown Character	Do not beep	
Scan Mode			
Scan Mode		Batch mode	Options: Batch mode, Trigger mode, Sense mode, Continuous mode.
Trigger Mode	Decode Session Timeout	3,000ms	Applicable to a Trigger mode, Sense mode, Continuous mode. 0~3,600,000ms
	Trigger Condition	Electric level	
	Auto Sleep	Enabled	
	Time Period from Idle to Sleep	500ms	0~65,535ms
Sense Mode	Decode Session Timeout	3,000ms	Applicable to Trigger mode, Sense mode, Continuous mode. 0~3,600,000ms
	Image Stabilization Timeout	500ms	0~1,600ms
	Operation after Good Decode	Pause after good decode	
	Timeout between Decodes	Disabled	
	(Same Barcode)	1,500ms	0~65,535ms
	Threshold Value of Illumination Change	2	1~20

Parameter		Factory Default	Remark
Continuous Mode	Decode Session Timeout	3,000ms	Applicable to Trigger mode, Sense mode, Continuous mode. 0~3,600,000ms
	Timeout between Decodes	1000ms	0~65,535ms
Cellphone Read Mode		Disabled	
Scanning Preferences			
Decode Area		Whole Area Decoding	
Central Area		20%	
Illumination & Aiming			
Illumination		Normal	
Aiming		Normal	
Beep & LED Indications			
Startup Beep		Enabled	
Beep after Good Decode (Non-Programming Barcode)	Notification	Enabled	
	Beep Type	Type 3	
	Beep Volume	Loud	
Beep after Good Decode (Programming Barcode)		Enabled	
LED Notification for Good Decode		Enabled	
NGR (Not Good Read) Message		Do not transmit	
		None	
Data Formatting			
Prefix Sequence		Custom Prefix+Code ID+AIM ID	
Custom Prefix		Disabled	
		None	
AIM ID Prefix		Disabled	
Code ID Prefix		Disabled	
Custom Suffix		Disabled	
		None	
Terminating Character Suffix		Enabled	
		0x0D, 0x0A	Carriage Return /Line Feed
Image Control			
Ambient Illumination		Normal illuminance	
Image Flipping		Do not flip	

Parameter	Factory Default	Remark
Symbologies		
Video Reverse	Disabled	Applicable to all symbologies.
Code 128		
Code 128	Enabled	
Maximum Length	127	
Minimum Length	1	
GS1-128 (UCC/EAN-128)		
GS1-128	Enabled	
Maximum Length	127	
Minimum Length	1	
AIM-128		
AIM-128	Enabled	
Maximum Length	127	
Minimum Length	1	
EAN-8		
EAN-8	Enabled	
Check Digit	Transmit	
2-Digit Add-On Code	Disabled	
5-Digit Add-On Code	Disabled	
Add-On Code	Not required	
Extend to EAN-13	Disabled	
EAN-13		
EAN-13	Enabled	
Check Digit	Transmit	
2-Digit Add-On Code	Disabled	
5-Digit Add-On Code	Disabled	
Add-On Code	Not required	
ISSN		
ISSN	Disabled	
2-Digit Add-On Code	Disabled	
5-Digit Add-On Code	Disabled	
Add-On Code	Not required	

Parameter	Factory Default	Remark
ISBN		
ISBN	Enabled	
ISBN Format	ISBN-13	
2-Digit Add-On Code	Disabled	
5-Digit Add-On Code	Disabled	
Add-On Code	Not required	
UPC-E		
UPC-E	Enabled	
Check Digit	Transmit	
2-Digit Add-On Code	Disabled	
5-Digit Add-On Code	Disabled	
Add-On Code	Not required	
Extend to UPC-A	Disabled	
System Character “0”	Do not transmit	
UPC-A		
UPC-A	Enabled	
Check Digit	Transmit	
2-Digit Add-On Code	Disabled	
5-Digit Add-On Code	Disabled	
Add-On Code	Not required	
Preamble Character “0”	Do not transmit	
Interleaved 2 of 5		
Interleaved 2 of 5	Enabled	
Check Digit Verification	Disabled	
Check Digit	Do not transmit	
Maximum Length	100	
Minimum Length	6	
ITF-6		
ITF-6	Disabled	
Check Digit	Do not transmit	

Parameter	Factory Default	Remark
ITF-14		
ITF-14	Enabled	
Check Digit	Do not transmit	
Matrix 2 of 5		
Matrix 2 of 5	Disabled	
Check Digit Verification	Enabled	
Check Digit	Do not transmit	
Maximum Length	127	
Minimum Length	6	
Industrial 2 of 5		
Industrial 2 of 5	Enabled	
Check Digit Verification	Disabled	
Check Digit	Do not transmit	
Maximum Length	127	
Minimum Length	6	
Standard 2 of 5		
Standard 2 of 5	Enabled	
Check Digit Verification	Disabled	
Check Digit	Do not transmit	
Maximum Length	127	
Minimum Length	6	
Code 39		
Code 39	Enabled	
Check Digit Verification	Disabled	
Check Digit	Do not transmit	
Start/Stop Character	Transmit	
Code 39 Full ASCII	Enabled	
Maximum Length	127	
Minimum Length	1	

Parameter	Factory Default	Remark
Codabar		
Codabar	Enabled	
Check Digit Verification	Disabled	
Check Digit	Do not transmit	
Start/Stop Character	Transmit	
Start/Stop Character Format	ABCD/ABCD	
Maximum Length	127	
Minimum Length	1	
Code 93		
Code 93	Enabled	
Check Digit Verification	Enabled	
Check Digit	Do not transmit	
Maximum Length	127	
Minimum Length	3	
GS1 Databar		
GS1 Databar	Enabled	
Application Identifier “01”	Transmit	
Code 11		
Code 11	Enabled	
Check Digit Verification	One check digit, MOD11	
Check Digit	Do not transmit	
Maximum Length	127	
Minimum Length	2	
Plessey		
Plessey	Enabled	
Check Digit Verification	Enabled	
Check Digit	Do not transmit	
Maximum Length	127	
Minimum Length	1	

Parameter	Factory Default	Remark
MSI-*Plessey*		
MSI-Plessey	Enabled	
Check Digit Verification	One check digit, MOD10	
Check Digit	Do not transmit	
Maximum Length	127	
Minimum Length	2	
PDF 417		
PDF 417	Enabled	
Maximum Length	2710	
Minimum Length	1	
PDF 417 Twin Code	Read single PDF417 only	
Transmission Order of Twin Code	Order 1	
QR Code		
QR Code	Enabled	
Micro QR	Enabled	
Maximum Length	7089	
Minimum Length	1	
QR Twin Code	Read single QR only	
Transmission Order of Twin Code	Order 3	
Data Matrix		
Data Matrix	Enabled	
Rectangular Barcode	Enabled	
Mirror Image	Decode	
Maximum Length	3116	
Minimum Length	1	
DM Twin Code	Read single DM only	

Appendix 2: AIM ID Table

Symbology	AIM ID	Remark
EAN-13	]E0	Standard EAN-13
	]E3	EAN-13 + 2/5-Digit Add-On Code
EAN-8	]E4	Standard EAN-8
	]E4…]E1…	EAN-8 + 2-Digit Add-On Code
	]E4…]E2…	EAN-8 + 5-Digit Add-On Code
UPC-E	]E0	Standard UPC-E
	]E3	UPC-E + 2/5-Digit Add-On Code
UPC-A	]E0	Standard UPC-A
	]E3	UPC-A + 2/5-Digit Add-On Code
Code 128	]C0	Standard Code 128
GS1-128 (UCC/EAN-128)	]C1	FNC1 is the character right after the start character
AIM-128	]C2	FNC1 is the 2nd character after the start character
ISBT-128	]C4	
Interleaved 2 of 5	]I0	No check digit verification
	]I1	Transmit check digit after verification
	]I3	Do not transmit check digit after verification
ITF-6	]I1	Transmit check digit
	]I3	Do not transmit check digit
ITF-14	]I1	Transmit check digit
	]I3	Do not transmit check digit
Industrial 2 of 5	]S0	Not specified
Standard 2 of 5	]R0	No check digit verification
	]R8	One check digit, MOD10; do not transmit check digit
	]R9	One check digit, MOD10; transmit check digit
Code 39	]A0	Transmit barcodes as is; Full ASCII disabled; no check digit verification
	]A1	One check digit, MOD43; transmit check digit
	]A3	One check digit, MOD43; do not transmit check digit
	]A4	Full ASCII enabled; no check digit verification
	]A5	Full ASCII enabled; transmit check digit
	]A7	Full ASCII enabled; do not transmit check digit
Codabar	]F0	Standard Codabar
	]F2	Transmit check digit after verification
	]F4	Do not transmit check digit after verification

Symbology	AIM ID	Remark
Code 93	]G0	Standard Code 93
Code 11	]H0	One check digit MOD11; transmit check digit
	]H1	Two check digits, MOD11/MOD11; transmit check digit
	]H3	Do not transmit check digit after verification
	]H9	No check digit verification
GS1-DataBar (RSS)	]e0	Standard GS1-DataBar
Plessey	]P0	Standard Plessey
MSI-Plessey	]M0	One check digit, MOD10; transmit check digit
	]M1	One check digit, MOD10; do not transmit check digit
	]M8	Two check digits
	]M9	No check digit verification
Matrix 2 of 5	]X0	Specified by the manufacturer
	]X1	No check digit verification
	]X2	One check digit, MOD10; transmit check digit
	]X3	One check digit, MOD11; do not transmit check digit
ISBN	]X4	Standard ISBN
ISSN	]X5	Standard ISSN
PDF417	]L0	Comply with 1994 PDF417 specifications
Data Matrix	]d0	ECC000 - ECC140
	]d1	ECC200
	]d2	ECC200, FNC1 is the 1st or 5th character after the start character
	]d3	ECC200, FNC1 is the 2nd or 6th character after the start character
	]d4	ECC200, ECI included
	]d5	ECC200, FNC1 is the 1st or 5th character after the start character,ECI included
	]d6	ECC200, FNC1 is the 2nd or 6th character after the start character,ECI included
QR Code	]Q0	QR1
	]Q1	2005 version, ECI excluded
	]Q2	2005 version, ECI included
	]Q3	QR Code 2005, ECI excluded, FNC1 is the 1st character after the start character
	]Q4	QR Code 2005, ECI included, FNC1 is the 1st character after the start character
	]Q5	QR Code 2005,ECI excluded,FNC1 is the 2nd character after the start character
	]Q6	QR Code 2005, ECI included, FNC1 is the 2nd character after the start character

Reference: ISO/IEC 15424:2008 Information technology – Automatic identification and data capture techniques – Data Carrier Identifiers (including Symbology Identifiers).

Appendix 3: Code ID Table

Symbology	Code ID
Code 128	j
GS1-128(UCC/EAN-128)	j
AIM-128	f
EAN-8	d
EAN-13	d
ISSN	n
ISBN	B
UPC-E	c
UPC-A	c
Interleaved 2 of 5	e
ITF-6	e
ITF-14	e
Matrix 2 of 5	v
Industrial 2 of 5	D
Standard 2 of 5	s
Code 39	b
Codabar	a
Code 93	i
Code 11	H
Plessey	p
MSI-Plessey	m
GS1 Databar	R
PDF417	r
QR Code	Q
Data Matrix	u

Appendix 4: ASCII Table

Hex	Dec	Char
00	0	NUL (Null char.)
01	1	SOH (Start of Header)
02	2	STX (Start of Text)
03	3	ETX (End of Text)
04	4	EOT (End of Transmission)
05	5	ENQ (Enquiry)
06	6	ACK (Acknowledgment)
07	7	BEL (Bell)
08	8	BS (Backspace)
09	9	HT (Horizontal Tab)
0a	10	LF (Line Feed)
0b	11	VT (Vertical Tab)
0c	12	FF (Form Feed)
0d	13	CR (Carriage Return)
0e	14	SO (Shift Out)
0f	15	SI (Shift In)
10	16	DLE (Data Link Escape)
11	17	DC1 (XON) (Device Control 1)
12	18	DC2 (Device Control 2)
13	19	DC3 (XOFF) (Device Control 3)
14	20	DC4 (Device Control 4)
15	21	NAK (Negative Acknowledgment)
16	22	SYN (Synchronous Idle)
17	23	ETB (End of Trans. Block)
18	24	CAN (Cancel)
19	25	EM (End of Medium)
1a	26	SUB (Substitute)
1b	27	ESC (Escape)
1c	28	FS (File Separator)
1d	29	GS (Group Separator)

Hex	Dec	Char
1e	30	RS (Request to Send)
1f	31	US (Unit Separator)
20	32	SP (Space)
21	33	! (Exclamation Mark)
22	34	" (Double Quote)
23	35	# (Number Sign)
24	36	$ (Dollar Sign)
25	37	% (Percent)
26	38	& (Ampersand)
27	39	` (Single Quote)
28	40	((Right / Closing Parenthesis)
29	41	) (Right / Closing Parenthesis)
2a	42	* (Asterisk)
2b	43	+ (Plus)
2c	44	, (Comma)
2d	45	- (Minus / Dash)
2e	46	. (Dot)
2f	47	/ (Forward Slash)
30	48	0
31	49	1
32	50	2
33	51	3
34	52	4
35	53	5
36	54	6
37	55	7
38	56	8
39	57	9
3a	58	: (Colon)
3b	59	; (Semi-colon)
3c	60	< (Less Than)
3d	61	= (Equal Sign)

Hex	Dec	Char
3e	62	> (Greater Than)
3f	63	? (Question Mark)
40	64	@ (AT Symbol)
41	65	A
42	66	B
43	67	C
44	68	D
45	69	E
46	70	F
47	71	G
48	72	H
49	73	I
4a	74	J
4b	75	K
4c	76	L
4d	77	M
4e	78	N
4f	79	O
50	80	P
51	81	Q
52	82	R
53	83	S
54	84	T
55	85	U
56	86	V
57	87	W
58	88	X
59	89	Y
5a	90	Z
5b	91	[(Left / Opening Bracket)
5c	92	\ (Back Slash)
5d	93	] (Right / Closing Bracket)

Hex	Dec	Char
5e	94	^ (Caret / Circumflex)
5f	95	_ (Underscore)
60	96	' (Grave Accent)
61	97	A
62	98	b
63	99	C
64	100	D
65	101	E
66	102	F
67	103	G
68	104	H
69	105	I
6a	106	J
6b	107	K
6c	108	L
6d	109	M
6e	110	N
6f	111	O
70	112	P
71	113	Q
72	114	R
73	115	S
74	116	T
75	117	U
76	118	V
77	119	W
78	120	X
79	121	Y
7a	122	Z
7b	123	{ (Left/ Opening Brace)
7c	124	| (Vertical Bar)
7d	125	} (Right/Closing Brace)
7e	126	~ (Tilde)
7f	127	DEL (Delete)

Appendix 5: Parameter Programming Examples

The following examples show you how to program parameters by scanning programming barcodes.

a. Program the Decode Session Timeout

Example: Set the decode session timeout to 1500ms

1. Scan the **Enter Setup** barcode.
2. Scan the **Decode Session Timeout** barcode. (See the **"Decode Session Timeout"** section in Chapter 3)
3. Scan the numeric barcodes "1", "5", "0" and "0".
4. Scan the **Save** barcode.
5. Scan the **Exit Setup** barcode. (If you still need to program other parameter/feature, skip this step.)

b. Program the Time Period from Idle to Sleep

Example: Set the time period from idle to sleep to 500ms

1. Scan the **Enter Setup** barcode.
2. Scan the **Time Period from Idle to Sleep** barcode. (See the **"Auto Sleep"** section in Chapter 3)
3. Scan the numeric barcodes "5", "0" and "0".
4. Scan the **Save** barcode.
5. Scan the **Exit Setup** barcode. (If you still need to program other parameter/feature, skip this step.)

c. Program the Image Stabilization Timeout

Example: Set the image stabilization timeout to 500ms

1. Scan the **Enter Setup** barcode.
2. Scan the **Image Stabilization Timeout** barcode. (See the **"Image Stabilization Timeout"** section in Chapter 3)
3. Scan the numeric barcodes "5", "0" and "0".
4. Scan the **Save** barcode.
5. Scan the **Exit Setup** barcode. (If you still need to program other parameter/feature, skip this step.)

d. Program the Timeout between Decodes (Same Barcode)

Example: Set the timeout between decodes (same barcode) to 1000ms

1. Scan the **Enter Setup** barcode.
2. Scan the **Timeout between Decodes (Same Barcode)** barcode. (See the **"Timeout between Decodes (Same Barcode)"** section in Chapter 3)
3. Scan the numeric barcodes "1", "0", "0" and "0".
4. Scan the **Save** barcode.
5. Scan the **Exit Setup** barcode. (If you still need to program other parameter/feature, skip this step.)

e. Program the Threshold Value of Illumination Change

Example: Set the threshold value of illumination change to 4

1. Scan the **Enter Setup** barcode.
2. Scan the **Threshold Value of Illumination Change** barcode. (See the **"Sensitivity"** section in Chapter 3)
3. Scan the numeric barcode "4".
4. Scan the **Save** barcode.
5. Scan the **Exit Setup** barcode. (If you still need to program other parameter/feature, skip this step.)

f. Program the Timeout between Decodes

Example: Set the timeout between decodes to 500ms

1. Scan the **Enter Setup** barcode.
2. Scan the **Timeout between Decodes** barcode. (See the **"Timeout between Decodes"** section in Chapter 3)
3. Scan the numeric barcodes "5","0" and "0".
4. Scan the **Save** barcode.
5. Scan the **Exit Setup** barcode. (If you still need to program other parameter/feature, skip this step.)

g. Program the Central Area

Example: Set the percentage of central area to 20%

1. Scan the **Enter Setup** barcode.
2. Scan the **Specify Central Area** barcode.
3. Scan the numeric barcodes “2” and “0”.
4. Scan the **Save** barcode.
5. Scan the **Exit Setup** barcode. (If you still need to program other parameter/feature, skip this step.)

h. Program the Custom Prefix/Suffix

Example: Set the custom prefix to “CODE”

1. Check the hex values of “CODE” in the ASCII Table. (“CODE”: 43, 4F, 44, 45)
2. Scan the **Enter Setup** barcode.
3. Scan the **Set Custom Prefix** barcode. (See the **“Set Custom Prefix”** section in Chapter 6)
4. Scan the numeric barcodes “4”, “3”, “4”, “F”, “4”, “4”, “4” and “5”.
5. Scan the **Save** barcode.
6. Scan the **Exit Setup** barcode. (If you still need to program other parameter/feature, skip this step.)

i. Program the Terminating Character Suffix

Example: Set the terminating character suffix to 0x0D

1. Scan the **Enter Setup** barcode.
2. Scan the **Set Terminating Character Suffix** barcode. (See the **“Set Terminating Character Suffix”** section in Chapter 6)
3. Scan the numeric barcodes “0” and “D”.
4. Scan the **Save** barcode.
5. Scan the **Exit Setup** barcode. (If you still need to program other parameter/feature, skip this step.)

j. Program the Code ID

Example: Set the Code ID of PDF 417 to "p"

1. Check the hex value of "p" in the ASCII Table. ("p": 70)
2. Scan the **Enter Setup** barcode.
3. Scan the **Modify PDF417 Code ID** barcode. (See the **"Modify Code ID"** section in Chapter 6)
4. Scan the numeric barcodes "7" and "0".
5. Scan the **Save** barcode.
6. Scan the **Exit Setup** barcode. (If you still need to program other parameter/feature, skip this step.)

k. Program the NGR Message

Example: Set the NGR message to "!ERR"

1. Check the hex values of "!ERR" in the ASCII Table. ("!ERR": 21, 45, 52, 52)
2. Scan the **Enter Setup** barcode.
3. Scan the **Edit NGR Message** barcode. (See the **"Edit NGR Message"** section in Chapter 5)
4. Scan the numeric barcodes "2", "1", "4", "5", "5", "2", "5" and "2".
5. Scan the **Save** barcode.
6. Scan the **Exit Setup** barcode. (If you still need to program other parameter/feature, skip this step.)

I. Program the Length Range (Maximum/Minimum Lengths) for a Symbology

Note: If minimum length is set to be greater than maximum length, the engine only decodes barcodes with either the minimum or maximum length. If you only want to read barcodes with a specific length, set both minimum and maximum lengths to be that desired length.

Example: Set the engine to decode Code 128 barcodes containing between 8 and 12 characters

1. Scan the **Enter Setup** barcode.
2. Scan the **Set the Minimum Length** barcode. (See the **"Set Length Range for Code 128"** section in Chapter 7)
3. Scan the numeric barcode "8".
4. Scan the **Save** barcode.
5. Scan the **Set the Maximum Length** barcode. (See the **"Set Length Range for Code 128"** section in Chapter 7)
6. Scan the numeric barcodes "1" and "2".
7. Scan the **Save** barcode.
8. Scan the **Exit Setup** barcode. (If you still need to program other parameter/feature, skip this step.)

Appendix 6: Digit Barcodes

0-9

0

5

1

6

2

7

3

8

4

9

A-F

A

B

C

D

E

F

Appendix 7: Save/Cancel Barcodes

After reading numeric barcode(s), you need to scan the **Save** barcode to save the data. If you scan the wrong digit(s), you can either scan the **Cancel** barcode and then start the configuration all over again, or scan the **Delete the Last Digit** barcode and then the correct digit, or scan the **Delete All Digits** barcode and then the digits you want.

For instance, after reading the **Maximum Length** barcode and numeric barcodes “1”, “2” and “3”, you scan:

- **Delete the Last Digit:** The last digit “3” will be removed.
- **Delete All Digits:** All digits “123” will be removed.
- **Cancel:** The maximum length configuration will be cancelled. And the engine is still in the setup mode.

Save

Delete the Last Digit

Delete All Digits

Cancel

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